

## **ΚΑΝΟΝΙΣΜΟΙ «ENGINE COLOUR PICKING»**

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Οργανωτική Επιτροπή ROBOTEX CYPRUS

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## **1. Introduction**

The Colour Picking challenge is organized for the first time in ROBOTEX CYPRUS, it was recommended by ENGINO, the gold sponsor of the event.

## **2. Objective**

The objective of the challenge is for the competing robots to collect as many cubes at specific locations on the field and at the same time maximizing the total number of points with which the cubes are represented with.

## **3. Eligibility for Participation**

1. The challenge accepts participation of teams and not individuals.
2. The team consists of 2-5 persons.

## **4. The Field**

1. The field is of 4m x 2m size, white coloured with pvc walls around it.
2. It is separated in two equal sides **with a black line around them** with a white pvc separator in the middle, and a concentration area in each side, coloured grey.
3. Cubes are placed on the field at fixed positions.
4. There are 13 fixed positions in each side of the field.
5. You may see a sample field in the **APPENDIX – SAMPLE FIELD** (page 7)

## **5. The Robot**

1. The robot is the new robot PRODUINO from ENGINO®.
2. The robot must be autonomous.
3. The robot must not destroy the field or to be of threat to the players or the spectators in any way.
4. The robot must be constructed with original parts from the STEM & Robotics Produino set (Product Code: E40) from ENGINO® or other peripheral Arduino components and to use only batteries or cells as recommended by ENGINO®, preferably rechargeable batteries.
5. For purposes of orientation, the robot can use a compass included in the set.

## 6. The Competition

1. Two teams are competing against each other in one round.
2. The duration of the round is three minutes.
3. Ten (10) cubes of three different colours are placed on the field in fixed positions.
4. The number of cubes of each colours on the field are as follows:

Colour of Cube	No. of cubes In the field
Green	2
Blue	6
Red	2

5. Each colour bears different mark(s), the red and blue cubes get positive marks and the red cubes negative marks, as follows:

Colour of Cube	No. of Marks
Green	+3
Blue	+1
Red	-6

6. Each team selects its side on the field where each robot will concentrate its cubes.
7. For every round, the cube locations will be decided and the cubes placed on the field; thus the teams will not know the colour positions beforehand. Colour positions will be different for every match so as to avoid the case where by teams code the locations of the cubes before competing.
8. The robots start from the same point floor but with random orientation decided on the spot by a spinning arrow, and they have to find the coloured cubes and direct them, move them, to their selected sides.
9. **The robots must move inside the area which is determined by the outer black line. In case of moving outside those lines they will be eliminated.**
10. The robot which concentrates the cubes with the maximum total points is considered the winner.
11. If the robot concentrates a negative cube to its side then the respective points are deducted from its total.
12. If the negative cube is simply moved from its position, then no marks are deducted.
13. No marks are deducted if the robot hits on the walls of the field.
14. No marks are deducted if the robot hits on the separator between the two sides of the field.
15. In case that a robot crosses to the side of the other robot, the other robot automatically wins the game.

## 7. Categories and Levels

The competition is executed only for the platform E40 STEM & Robotics Produino from ENGINO® for all levels except the primary school.

**Table 1: Categories & Levels for COLOR PICKING**

Category →		Primary	Primary	Gymnasium	Lyceum	University	Special Category
Challenges ↓	Level →	1 <sup>st</sup> – 3 <sup>rd</sup>	4 <sup>th</sup> – 6 <sup>th</sup>	1 <sup>st</sup> – 3 <sup>rd</sup>	4 <sup>th</sup> – 7 <sup>th</sup>	All Years of Study	Soldiers, & Adults
Engino Colour Picking		X	X	✓	✓	✓	✓

## 8. Skills Required

- To be successful in this challenge, the following skills are essential:
  - Finding orientation
  - Colour Recognition
  - Detection and avoidance of obstacles
  - Modular construction

## 9. Terms and Conditions of Participation

- Participation in ROBOTEX CYPRUS assumes and requires acceptance of all terms and conditions for participation by competitors, the coaches and the organizations they represent.
- In case of any difference in the competition rules between the English and the Greek versions, the English version is considered as correct.
- The robot must be registered before the competition. The registration process includes technical inspection of the robot, marking the robot with a number sticker, and the order in which it will compete which is generated by an algorithm in the information system supporting the ROBOTEX CYPRUS organization.
- All questions and issues that may arise during the competitions must be reported to the judges.
- The final decision about objections will be taken by the judges in cooperation with the organizers.
- Judges' decisions on any objections are considered final and can not be challenged by participants, the coaches or the organizations they represent.

## **10. Robot Technical Control**

1. The robots' technical control will take place on the day of the competition at an area and on time specified by the organizers.
2. Failure of a team to come in time for a robot's technical check leads to the team being excluded from the event.
3. The leader of the team only is responsible to take the team's robot for technical control.
4. Technical control takes place before each phase of the competition (preliminary, qualifying, final) in which the team may participate.
5. Technical control includes the control of the robot based on the above and the paragraph "The Robot", if this paragraph exists. If the robot does not meet the requirements it will not be accepted to compete and will automatically be disqualified from the event.

## **11. Changes and Cancellation of Rules**

Any changes and/or cancellations in the rules of the competition are decided by the Cyprus Computer Society in consultation with the Organizing Committee of the CYPRUS ROBOTEX CHALLENGE. You may address comments and suggestions to the Organizers at [robotex@ccs.org.cy](mailto:robotex@ccs.org.cy) .



### APPENDIX – SAMPLE FIELD

